

## CLAIMS:

1. An array (20) of magnetoresistive memory elements (10) comprising:
  - means for applying a current or a voltage for generating a programming magnetic field at a selected magnetoresistive memory element (10s),
  - a magnetic field sensor unit (50) for measuring an external magnetic field in the vicinity of the selected magnetoresistive memory element (10s), and
  - means (52) for tuning the current or voltage for compensating locally for the measured external magnetic field during a programming operation.
2. An array according to claim 1, wherein the magnetic field sensor unit (50) is  
10 an analog sensor unit.
3. An array according to claim 1, wherein the magnetic field sensor unit comprises a plurality of magnetic field sensors (50)
- 15 4. An array (20) according to claim 1, wherein the means for applying the current or voltage comprise at least one current line (14, 15) and means for flowing current ( $I_{bit}$ ,  $I_{word}$ ) through the at least one current line.
5. An array (20) according to claim 1, wherein the magnetic field sensor unit (50)  
20 is adapted to generate an output signal (51) representative of the external magnetic field measured.
6. An array (20) according to claim 4, wherein the means (52) for tuning the current or voltage comprises a compensation circuit for imposing a compensation current  
25 ( $I_{comp\_b}$ ,  $I_{comp\_w}$ ) to flow through the at least one current line (14, 15).
7. An array (20) according to claim 6, wherein the compensation circuit also imposes a compensation magnetic field at the magnetic field sensor unit (50).

8. An array (20) according to claim 2, wherein the analog magnetic field sensor unit (50) is an element of the same construction as the magnetoresistive memory elements (10).

5 9. An array (20) according to claim 8, wherein the magnetic field sensor unit (50) is more sensitive to magnetic fields than the magnetoresistive memory elements (10).

10. Method for compensating for the presence of an external magnetic field during programming of a magnetic memory element (10), the programming being performed by  
10 applying an current ( $I_{bit}$ ,  $I_{word}$ ) or a voltage for generating a programming magnetic field to the magnetic memory element (10), the method comprising:  
- measuring the external magnetic field in the vicinity of the magnetic memory element (10), and  
- locally compensating for the external magnetic field during the programming  
15 operation by tuning the current ( $I_{bit}$ ,  $I_{word}$ ) or voltage for generating the programming magnetic field.

11. Method according to claim 10, wherein applying an current or a voltage comprises flowing a current ( $I_{bit}$ ,  $I_{word}$ ) through at least one current line (14, 15).

20 12. Method according to claim 11, wherein tuning the current or voltage comprises flowing a current ( $I_{bit}+I_{comp\_b}$ ,  $I_{word}+I_{comp\_w}$ ) through the at least one current line (14, 15), which current ( $I_{bit}+I_{comp\_b}$ ,  $I_{word}+I_{comp\_w}$ ) is different from the current ( $I_{bit}$ ,  $I_{word}$ ) which would flow through the at least one current line (14, 15) when no external magnetic  
25 field would be present in order to generate a same programming magnetic field.